REMARKS

It is respectfully requested that the Examiner enter and consider Claims 14 and 18 to 28 in the version set forth in Appendix II attached to this paper. Accordingly, Claims 14, 22, 23, and 25 to 28 are amended as indicated in the marked-up version set forth in in Appendix I, in light of the Examiner's rejection under Section 112, ¶2.

Claim 14 has been ameded to better bring out the essential features of the claimed subject matter. On the one hand, applicants have canceled the intended use sections in the preamble and the definitions of compounds (Ib) and (Ic). The wording *"for producing a solid electrolyte, a separator or an electrode in an electrochemical cell, or an electrochromic window, a display, a capacitor or an ion-conducting film in a sensor, which composition comprises"*, *"acts as cathode material"*, and *"acts as an anode material"* is therefore no longer used in Claim 14. Additionally, applicants have revised the definition of component (a) of the composition to refer to *"a solid (I) which is selected from a group consisting of"*. With regard to the Examiner's inquiry "A solid what?" it is respectfully submitted that the term *"solid"* is used as a noun in the context of the definition of (a). Also, in light of the Markush listing which now follows directly after the reference to the solid, the respective phrase is not deemed to render the subject matter of Claim 14 unclear. The additional editorial changes in the definition of Claim 14 take the change in the preamble of Claim 14 into account.

Claims 22 and 23 have been clarified by introducing a reference to the fact that the composition of Claim 14 is, in the context of the composite, in crosslinked form as disclosed on page 56, indicated line 10 et seq., of the application.

Correspondingly, Claim 25 now refers to a solid electrolyte etc. which comprises the crosslinked composition obtained by the process of Claim 23, and Claim 26 refers to a solid electrolyte etc. which comprises the composite defined in Claim 24. In Claims 27 and 28, the reference *"or a combination of two or more thereof"* has been deleted.

In light of the foregoing and the attached, the Examiner's reasons for finding that Claims 14 and 18 to 28 are indefinite under

the provisions of Section 112, ¶2, are no longer applicable. Withdrawal of the respective rejection is therefore respectfully solicited.

It is also respectfully solicited that the Examiner favorably reconsider and withdrawn the finality of the Office action. To the extent that the Examiner's remark that *"still no art has been cited"* (*emphasis added*) indicates that the patentability of applicants' invention in light of the prior art have as yet not been considered in this case, it would appear that the finality of the most recent Office action is premature under the provisions of 37 C.F.R. §104(b). In the event that prior art issues were to be raised by the Examiner in a future Office action, the most recent Office action would have to be considered incomplete as to matters of patentability, and would therefore not comply with the requirements of Rule 104(b). It is also respectfully noted that not all of the Examiner's reasons for finding that applicants' claims failed to meet the requirements of Section 112, ¶2, can be regarded as being necessitated by applicants' previous amendment.

The expression *"a solid Ia"* which was used in the definition of (a) in Claim 14 as filed was, for example, not deemed to be ambiguous in the Examiner's previous action, whereas the reference to *"a solid (I)"* subsequently prompted the Examiner's remark *"a solid what?"*. In light of the fact that both (I) and (Ia) are defined by a Markush expression applicants' could reasonably rely on the Examiner's concession that the expression *"a solid Ia"* was not objectionable under the provisions of Section 112, ¶2, when they introduced the wording *"a solid (I)"* in the definition of (a).

Similarly, the expressions *"which acts as cathode material"* and *"which acts as anode material"* were used in original Claims 15 and 16 to specify the compounds (Ib) and (Ic), respectively. In the first Office action, the Examiner did not indicate that those phrases were objectionable under Section 112, ¶2. Applicants' previous amendment merely introduced the language previously found in Claims 15 and 16 into Claim 14. Since the language in question was before the Examiner when the first Office action issued, applicants' amendment cannot have given rise to the Examiner's respective objections. In light of the foregoing it is deemed equitable that the

finality of the most recent Office action be withdrawn. Favorable action is respectfully solicited.

The following supplemental explanations are respectfully submitted in light of the intricacies involved in the particular technology underlying applicants' invention and to facilitate proceedings:

Applicants' invention relates to compositions which are suitable to produce solid electrolytes, separators, electrodes, sensors, electrochromic windows, displays, capacitors and ion-conducting films. The suitability for the respective purpose arises from the presence of the solid (I) which is, in accordance with applicants' invention, in combination with the polymeric material (II). When the polymeric material (II) is crosslinked, the particles of the solid (I) are embedded in the crosslinked polymer.

On the one hand, the sole presence of compounds (Ia) conveys to the article for example suitability as a separator. On the other hand, the presence of compounds (Ib), optionally in combination with compounds (Ia) and carbon black but in the absence of compounds (Ic), renders the article, for example, suitable as a cathode, and the presence of compounds (Ic), optionally in combination with the compounds (Ia) and, optionally, carbon black but in the absence of compounds (Ib), renders the article, for example, suitable as an anode. In the latter case, however, it is immediately apparent that the properties of the article are finally determined through the environment in which the article is used. Given the electrical conductivity conveyed to the article by the presence of either the compounds (Ia) or the compounds (Ib) the article serves as a solid electrolyte if arranged between, for example, conventional electrodes[1)].

REQUEST FOR EXTENSION OF TIME:

It is respectfully requested that a *one* month extension of time be granted in this case. A check for the *$110.00* fee is attached.

1) Exemplary arrangements are, for example, compiled in the table on page 61 of the application.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees to Deposit Account No. 11.0345. Please credit any excess fees to such deposit account.

Respectfully submitted,
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Encl.: THE CHANGES IN THE CLAIMS (Appendix I)
THE AMENDED CLAIMS (Appendix II)

HBK/BAS

APPENDIX I:

THE CHANGES IN THE CLAIMS (version with markings, showing the changes made):

14. (*twice amended*) A composition [~~for producing a solid electrolyte, a separator or an electrode in an electrochemical cell, or an electrochromic window, a display, a capacitor or an ion-conducting film in a sensor, which composition comprises~~] comprising

(a) from 1 to 99% by weight of a solid (I) which is selected from a group consisting of compounds Ia, Ib, Ic, mixtures of compounds Ia and Ib, and mixtures of compounds Ia and Ic, wherein the compounds have a primary particle size of from 5 nm to 100 µm, and

which solid (I) is insoluble in a liquid [~~electrolytes~~] electrolyte [~~used~~] suited for use in [~~said~~] an electrochemical cell, [~~and which is selected from a group consisting of compounds Ia, Ib, Ic, mixtures of Ia and Ib, and mixtures of Ia and Ic, said compounds having a primary particle size of from 5 nm to 100 µm,~~]

(b) from 1 to 99% by weight of a polymeric material (II),

wherein

the compound Ia is selected from the group consisting of

inorganic oxides, mixed oxides, silicates, sulfates, carbonates, phosphates, nitrides, amides, imides and carbides of the elements of main groups I, II, III and IV and transition group IV of the Periodic Table, polymers selected from the group consisting of polyethylene, polypropylene, polystyrene, polytetraflouroehtylene, polyvinylidene fluoride, polyamides and polyimides; dispersions comprising said polymers; and a mixture of two or more thereof;

the compound Ib [~~acts as cathode material and~~] is selected from the group consisting of

$LiCoO_2$, $LiNiO_2$, $LiNi_xCo_yO_2$ and $LiNi_xCo_yAl_zO_2$, where $0<x,y,z\leq 1$, Li_xMnO_2 $(0<x\leq 1)$, $Li_xMn_2O_4$ $(0<x\leq 2)$, Li_xMoO_2 $(0<x\leq 2)$, Li_xMnO_3 $(0<x\leq 1)$, Li_xMnO_2 $(0<x\leq 2)$, $Li_xMn_2O_4$ $(0<x\leq 2)$, $Li_xV_2O_4$ $(0<x\leq 2.5)$, $Li_xV_2O_3$ $(0<x\leq 3.5)$, Li_xVO_2 $(0<x\leq 1)$, Li_xWO_2 $(0<x\leq 1)$, Li_xWO_3 $(0<x\leq 1)$, Li_xTiO_2 $(0<x\leq 1)$, $Li_xTi_2O_4$ $(0<x\leq 2)$, Li_xRuO_2 $(0<x\leq 1)$, $Li_xFe_2O_3$ $(0<x\leq 2)$, $Li_xFe_3O_4$ $(0<x\leq 2)$, $Li_xCr_2O_3$ $(0<x\leq 3)$, $Li_xCr_3O_4$ $(0<x\leq 3.8)$, $Li_xV_3S_5$ $(0<x\leq 1.8)$, $Li_xTa_2S_2$ $(0<x\leq 1)$, Li_xFeS $(0<x\leq 1)$, Li_xFeS_2 $(0<x\leq 1)$, Li_xNbS_2 $(0<x\leq 2.4)$, Li_xMoS_2 $(0<x\leq 3)$, Li_xTiS_2

($0<x\leq 2$), Li_xZrS_2 ($0<x\leq 2$), Li_xNbSe_2 ($0<x\leq 3$), Li_xVSe_2 ($0<x\leq 1$), Li_xNiPS_2 ($0<x\leq 1.5$), Li_xFePS_2 ($0<x\leq 1.5$), $LiNi_xB_{1-x}O_2$ ($0<x<1$), $LiNi_xAl_{1-x}O_2$ ($0<x<1$), $LiNi_xMg_{1-x}O_2$ ($0<x<1$), $LiNi_xCo_{1-x}VO_4$ ($1\geq x\geq 0$), $LiNi_xCo_yMn_zO_2$ ($x+y+z=1$), $LiFeO_2$, $LiCrTiO_4$, $Li_aM_bL_cO_d$ ($1.15\geq a>0$; $1.3\geq b+c\geq 0.8$; $2.5\geq d\geq 1.7$; M = Ni, Co, Mn; L = Ti, Mn, Cu, Zn, alkaline earth metal), $LiCu_x^{II}Cu_y^{III}Mn_{(2-(x+y))}O_4$ ($2>x+y\geq 0$), $LiCrTiO_4$, $LiGa_xMn_{2-x}O_4$ ($0.1\geq x\geq 0$), poly(carbon sulfides), V_2O_5; and a mixture of two or more thereof,

the compound Ic [~~acts as an anode material and~~] is selected from the group consisting of

lithium, a lithium-containing metal alloy, micronized carbon black, natural and synthetic graphite, synthetically graphitized carbon powder, a carbon fiber, titanium oxide, zinc oxide, tin oxide, molybdenum oxide, tungsten oxide, titanium carbonate, molybdenum carbonate, zinc carbonate, $Li_xM_ySiO_z$ ($1>x\geq 0.1>y\geq 0$, $z>0$), Sn_2BPO_4, conjugated polymers, lithium metal compounds; and a mixture of two or more thereof,

and wherein

where the solid (I) is the mixture of Ia and Ib, the composition further comprises from 0.1 to 20% by weight, based on the total weight of components I and II, of conductive carbon black; and

where the solid (I) is the mixture of Ia and Ic, the composition further comprises up to 20% by weight, based on the total weight of the components I and II, of conductive carbon black;

and wherein said polymeric material (II) comprises

from 1 to 100% by weight of a polymer or copolymer (IIa) which has, as part of the polymer chain, at the end(s) of said chain and/or laterally on said chain, reactive groups (RG) which are capable of crosslinking reactions under the action of heat and/or UV radiation, and

from 0 to 99% by weight of at least one polymer or copolymer (IIb) which is free of reactive groups (RG).

22. (*twice amended*) A composite comprising at least one first layer <u>and at least one second layer, wherein the first and the second layer are obtained by crosslinking a</u> [~~which comprises the~~] composition <u>as</u> defined in claim 14<u>, and wherein the first layer comprises</u> [~~comprising~~] the compound Ib or the compound Ic, and [~~at least one~~] <u>the</u>

second layer [~~which comprises the composition which~~] comprises the compound Ia and is free of the compounds Ic and Ib.

23. (*twice amended*) A method of producing a [~~solid electrolyte, a separator, a sensor, an electrochromic window, a display, a capacitor or an ion-conducting film~~] crosslinked composition which comprises crosslinking the composition defined in claim 14 thermally or by irradiation with ionic or ionizing radiation, an electron beam, UV or visible light, by electrochemically induced polymerization or by ionic polymerization.

25. (*twice amended*) A solid selected from the group consisting of an electrolyte, a separator, an electrode, a sensor, an electrochromic window, a display, a capacitor [~~or~~] and an ion-conducting film, [~~in each case~~] which solid comprises the crosslinked composition obtained by the method of claim 23.

26. (*twice amended*) A solid selected from the group consisting of an electrolyte, a separator, an electrode, a sensor, an electrochromic window, a display, a capacitor [~~or~~] and an ion-conducting film, [~~in each case comprising~~] which solid comprises the composite [~~obtained by the method of claim 24~~] defined in claim 22.

27. (*twice amended*) An electrochemical cell comprising the solid electrolyte, the separator or the electrode defined in claim 25 [~~or a combination of two or more thereof~~].

28. (*twice amended*) An electrochemical cell comprising the solid electrolyte, the separator or the electrode defined in claim 26 [~~or a combination of two or more thereof~~].

APPENDIX II:

THE AMENDED CLAIMS (clean version):

14. (*twice amended*) A composition comprising

(a) from 1 to 99% by weight of a solid (I) which is selected from a group consisting of compounds Ia, Ib, Ic, mixtures of compounds Ia and Ib, and mixtures of compounds Ia and Ic, wherein the compounds have a primary particle size of from 5 nm to 100 µm, and

which solid (I) is insoluble in a liquid electrolyte suited for use in an electrochemical cell,

(b) from 1 to 99% by weight of a polymeric material (II),

wherein

the compound Ia is selected from the group consisting of

inorganic oxides, mixed oxides, silicates, sulfates, carbonates, phosphates, nitrides, amides, imides and carbides of the elements of main groups I, II, III and IV and transition group IV of the Periodic Table, polymers selected from the group consisting of polyethylene, polypropylene, polystyrene, polytetrafluouroehtylene, polyvinylidene fluoride, polyamides and polyimides; dispersions comprising said polymers; and a mixture of two or more thereof;

the compound Ib is selected from the group consisting of

$LiCoO_2$, $LiNiO_2$, $LiNi_xCo_yO_2$ and $LiNi_xCo_yAl_zO_2$, where $0<x,y,z\leq 1$, Li_xMnO_2 $(0<x\leq 1)$, $Li_xMn_2O_4$ $(0<x\leq 2)$, Li_xMoO_2 $(0<x\leq 2)$, Li_xMnO_3 $(0<x\leq 1)$, Li_xMnO_2 $(0<x\leq 2)$, $Li_xMn_2O_4$ $(0<x\leq 2)$, $Li_xV_2O_4$ $(0<x\leq 2.5)$, $Li_xV_2O_3$ $(0<x\leq 3.5)$, Li_xVO_2 $(0<x\leq 1)$, Li_xWO_2 $(0<x\leq 1)$, Li_xWO_3 $(0<x\leq 1)$, Li_xTiO_2 $(0<x\leq 1)$, $Li_xTi_2O_4$ $(0<x\leq 2)$, Li_xRuO_2 $(0<x\leq 1)$, $Li_xFe_2O_3$ $(0<x\leq 2)$, $Li_xFe_3O_4$ $(0<x\leq 2)$, $Li_xCr_2O_3$ $(0<x\leq 3)$, $Li_xCr_3O_4$ $(0<x\leq 3.8)$, $Li_xV_3S_5$ $(0<x\leq 1.8)$, $Li_xTa_2S_2$ $(0<x\leq 1)$, Li_xFeS $(0<x\leq 1)$, Li_xFeS_2 $(0<x\leq 1)$, Li_xNbS_2 $(0<x\leq 2.4)$, Li_xMoS_2 $(0<x\leq 3)$, Li_xTiS_2 $(0<x\leq 2)$, Li_xZrS_2 $(0<x\leq 2)$, Li_xNbSe_2 $(0<x\leq 3)$, Li_xVSe_2 $(0<x\leq 1)$, Li_xNiPS_2 $(0<x\leq 1.5)$, Li_xFePS_2 $(0<x\leq 1.5)$, $LiNi_xB_{1-x}O_2$ $(0<x<1)$, $LiNi_xAl_{1-x}O_2$ $(0<x<1)$, $LiNi_xMg_{1-x}O_2$ $(0<x<1)$, $LiNi_xCo_{1-x}VO_4$ $(1\geq x\geq 0)$, $LiNi_xCo_yMn_zO_2$ $(x+y+z=1)$, $LiFeO_2$, $LiCrTiO_4$, $Li_aM_bL_cO_d$ $(1.15\geq a>0;\ 1.3\geq b+c\geq 0.8;\ 2.5\geq d\geq 1.7;$ M = Ni, Co, Mn; L = Ti, Mn, Cu, Zn, alkaline earth metal), $LiCu_x^{II}Cu_y^{III}Mn_{(2-(x+y))}O_4$ $(2>x+y\geq 0)$, $LiCrTiO_4$, $LiGa_xMn_{2-x}O_4$

($0.1 \geq x \geq 0$), poly(carbon sulfides), V_2O_5; and a mixture of two or more thereof,

the compound Ic is selected from the group consisting of

lithium, a lithium-containing metal alloy, micronized carbon black, natural and synthetic graphite, synthetically graphitized carbon powder, a carbon fiber, titanium oxide, zinc oxide, tin oxide, molybdenum oxide, tungsten oxide, titanium carbonate, molybdenum carbonate, zinc carbonate, $Li_xM_ySiO_z$ ($1 > x \geq 0.1 > y \geq 0$, $z > 0$), Sn_2BPO_4, conjugated polymers, lithium metal compounds; and a mixture of two or more thereof,

and wherein

where the solid (I) is the mixture of Ia and Ib, the composition further comprises from 0.1 to 20% by weight, based on the total weight of components I and II, of conductive carbon black; and

where the solid (I) is the mixture of Ia and Ic, the composition further comprises up to 20% by weight, based on the total weight of the components I and II, of conductive carbon black;

and wherein said polymeric material (II) comprises

from 1 to 100% by weight of a polymer or copolymer (IIa) which has, as part of the polymer chain, at the end(s) of said chain and/or laterally on said chain, reactive groups (RG) which are capable of crosslinking reactions under the action of heat and/or UV radiation, and

from 0 to 99% by weight of at least one polymer or copolymer (IIb) which is free of reactive groups (RG).

18. (*amended*) The composition as claimed in claim 14, wherein the polymer (IIa) has, as part of said chain, at the end(s) of said chain and/or laterally on said chain, at least one reactive group RGa which in the triplet excited state under the action of heat and/or UV radiation is capable of hydrogen abstraction and has, as part of said chain, at the end(s) of said chain and/or laterally on said chain, at least one group RGb which is different from RGa and is coreactive with RGa, with at least one group RGa and at least one group RGb being present on average over all polymer molecules.

19. (*amended*) The composition as claimed in claim 14, wherein the polymer (IIa) is a polymer or copolymer of an acrylate or methacrylate and has reactive groups RGa which comprise benzophenone

units and reactive groups RGb which comprise dihydrodicyclopentadiene units.

20. (*amended*) The composition as claimed in claim 14, wherein the polymer (IIb) is selected from the group consisting of

a polymer or copolymer of vinyl chloride, acrylonitrile, vinylidene fluoride;

a copolymer of vinyl chloride and vinylidene chloride, vinyl chloride and acrylonitrile, vinylidene fluoride and hexafluoropropylene, vinylidene fluoride and hexafluoropropylene;

a terpolymer of vinylidene fluoride and hexafluoropropylene together with a member of the group consisting of vinyl fluoride, tetrafluoroethylene and trifluoroethylene.

21. (*amended*) The composition as claimed in claim 19, wherein the polymer (IIb) is a copolymer of vinylidene fluoride and hexafluoropropylene.

22. (*twice amended*) A composite comprising at least one first layer and at least one second layer, wherein the first and the second layer are obtained by crosslinking a composition as defined in claim 14, and wherein the first layer comprises the compound Ib or the compound Ic, and the second layer comprises the compound Ia and is free of the compounds Ic and Ib.

23. (*twice amended*) A method of producing a crosslinked composition which comprises crosslinking the composition defined in claim 14 thermally or by irradiation with ionic or ionizing radiation, an electron beam, UV or visible light, by electrochemically induced polymerization or by ionic polymerization.

24. (*amended*) A method of producing the composite defined in claim 22 which comprises

(I) producing the at least one first layer by crosslinking the composition comprising the compound Ib or the compound Ic thermally or by irradiation with ionic or ionizing radiation, an electron beam, UV or visible light, by electrochemically induced polymerization or by ionic polymerization,

(II) producing the at least one second layer by crosslinking the composition comprising the compound Ia and being free of the compounds IB and Ic thermally or by irradiation with ionic or ionizing radiation, an electron beam, UV or visible light, by

electrochemically induced polymerization or by ionic polymerization, and

(III) combining the at least one first layer and the at least one second layer by means of a conventional coating process.

25. (*twice amended*) A solid selected from the group consisting of an electrolyte, a separator, an electrode, a sensor, an electrochromic window, a display, a capacitor and an ion-conducting film, which solid comprises the crosslinked composition obtained by the method of claim 23.

26. (*twice amended*) A solid selected from the group consisting of an electrolyte, a separator, an electrode, a sensor, an electrochromic window, a display, a capacitor and an ion-conducting film, which solid comprises the composite defined in claim 22.

27. (*twice amended*) An electrochemical cell comprising the solid electrolyte, the separator or the electrode defined in claim 25.

28. (*twice amended*) An electrochemical cell comprising the solid electrolyte, the separator or the electrode defined in claim 26.